Abstract

Transient behaviour of a first-come first-served, two-dimensional state M/G/1 queueing model with working vacation is studied. As soon as the system becomes empty, the server
leaves the system and takes vacation for random duration during which it may perform ancillary
duty and is called on working vacation. The server works with different service rate rather than
completely stopping service during a vacation. Both service times during busy period and
vacation period and vacation times are assumed to follow general distribution. The Laplace
transform of the probabilities of exact number of arrivals and departure by a given time are
obtained. The emphasis in this paper is theoretical but numerical assessment of operational
consequences is also given and presented graphically. Finally some particular cases are
derived there from.

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Index Terms

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